

Evidence for a change in behaviour among heterosexuals in Amsterdam under the influence of AIDS

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Abstract

In determining the effectiveness of AIDS preventive measures among heterosexuals, trends in visits to two clinics for sexually transmitted diseases (STD) in Amsterdam between 1982 and 1989 are described. Also, data on sexual behaviour are presented that were collected in a sample of 635 heterosexual women and 947 heterosexual men at one of the clinics between September 1986 and December 1988. In 1987, when in The Netherlands for the first time extensive publicity was given to the risk of heterosexual transmission of the human immunodeficiency virus, the numbers of male and female heterosexual attenders started to decline. Exceptions to this general decline were men of Turkish nationality and foreign prostitutes, each group showing a continuing increase. At the same time, the numbers of customers reported by prostitutes in the sample declined markedly between 1986 and 1988, from a median of 35 to 15 per month ($p = 0.001$). Condom use with casual contacts generally increased in the sample period. We conclude that the publicity given to "heterosexual AIDS"—contributed to by the national AIDS prevention campaign—apparently led to a considerable decrease in the number of risky contacts of heterosexuals in Amsterdam in 1987 and 1988. This does not seem to apply to men with Turkish nationality. In 1989 a change appeared in several subgroups when the number of visitors started to rise. Also, the probability of an STD diagnosis increased in male attenders. This may indicate a change in the tendency towards safer sexual behaviour.

Introduction

Since early 1987 extensive attention has been paid in the Dutch media to the risk of heterosexual transmission of the human immunodeficiency virus (HIV), the causal agent that may lead to the acquired immunodeficiency syndrome (AIDS). A large part of the spread of information took place within the framework of the first national government sponsored AIDS prevention campaign. This campaign, which started in April 1987, explicitly advocated practising "safe sex". The use of condoms was strongly recommended and having anal intercourse discouraged.

So far little is known about the effect of the prevention campaign and of other sources of information on heterosexual behaviour. Since 1987, decreasing numbers of consultations at the Amsterdam clinics for sexually transmitted diseases (STD) were noted,¹ along with a declining incidence of gonorrhoea among heterosexuals^{2,3} which interestingly started in 1982, before the "discovery" of AIDS.

There are two STD clinics in Amsterdam that are operated by the Municipal Health Service, where one can go for an anonymous examination, free of charge. (In August 1990 the two clinics were joined.) These clinics mainly serve the city's own population: over 80% of all visitors are residents of Amsterdam.¹ On the basis of a survey among physicians in Amsterdam⁴ it is estimated that 42% of the gonorrhoea cases and 48% of all cases of syphilis diagnosed in the city, are diagnosed at the two STD clinics. It is clear therefore that these clinics see an important part of the city's population that runs a relatively high risk of becoming infected with STD. It seems likely that because of their behaviour this population is also at risk for an HIV infection.

Studying trends in visits to the STD clinics and of sexual behaviour of visitors may therefore render information on the effectiveness of AIDS prevention measures. The effectiveness of prevention efforts may depend on the cultural background of the target population. Like many other

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major cities, Amsterdam has several large ethnic minority groups among its approximately 700,000 residents. Of these, those from Surinam and The Netherlands Antilles (8.8%), from Morocco (4.6%) and from Turkey (3.0%) are the largest (data published 1990⁵). In the present study trends in visits to the two Amsterdam STD clinics over the years 1982 to 1989 are analysed, focusing on differences between subgroups and on the question as to whether conclusions can be drawn on the influence of the AIDS prevention campaign on the sexual behaviour of these subgroups.

Methods

1 Attenders at the STD clinics, 1982–1989

Since 1982, at every “new consultation”—that is, every visit which is not a follow-up visit resulting from an earlier consultation but resulting from a new complaint—by attenders at the STD clinics, a limited amount of information is coded and entered into a computer under a patient identification code. Sex, nationality, place of residence, age, sexual orientation in the preceding year, and STD diagnoses (including “no diagnosis”) are all available for analysis. Among the most frequently diagnosed STD are gonorrhoea, *Chlamydia trachomatis* infections, non-gonococcal urethritis, ulcerations and vaginitis.¹ Since 1982, no substantial changes have been made in the applied diagnostic methods, except for gradually expanded *Chlamydia trachomatis* diagnostics. This change led mainly to a shift in diagnoses (what was initially diagnosed as non-gonococcal urethritis would later be labelled as a *Chlamydia trachomatis* infection) and not to a decrease in the category “no diagnosis”. As a consequence of changes in coding, not all variables that are of interest here could be used from 1982 onwards. Ethnicity was not recorded, but several different nationalities were coded separately. In 1982 the only distinction made was between those of Dutch nationality versus others, but from 1983 onwards Turkish and Moroccan nationalities were also coded separately. Visitors of Surinam origin generally have Dutch nationality and therefore are recorded as such.

Attenders were analysed in the categories of heterosexual female Dutch prostitutes, Dutch non-prostitutes, foreign prostitutes, foreign non-prostitutes and the heterosexual male categories of Dutch, Turkish, Moroccan and other nationalities. For reasons of comparison, bisexual and homosexual men were also analysed. Homosexuals form a group which were already well infor-

med about the ways of HIV transmission at an early stage of the AIDS epidemic and have shown changes in behaviour since 1984.⁶ Attenders (mainly female) at the special evening clinic for drug-using prostitutes were excluded from the analyses. This was possible from 1985, when a separate code was introduced for visits to the evening clinic.

2 Sample of attenders at the STD clinics, 1986–1988

Although obtaining a detailed sexual behaviour history is part of the normal STD checkup routine at the clinics, this information is not coded and is therefore not available for analysis. However, from 1 September 1986 to 31 December 1988 a study was performed in one of the STD clinics on the prevalence and risk factors for *Chlamydia trachomatis* (CT) infection in a sample of STD clinic visitors. On two varying days of the week a maximum of eight male and four female participants were recruited from the first attenders of the day. Details of this study are described elsewhere.⁷ Exclusion criteria for participation in the CT study (present use of antibiotics, previous consultation at the clinic in the preceding four weeks or expected stay in The Netherlands of less than six weeks after the present consultation) accounted for the fact that some small segments of the total population of visitors to the clinic remained outside the sample. As part of this study several sexual behaviour characteristics of participants were recorded, among which were: the number of different sexual partners in the preceding month and in the preceding six months; having experienced passive anogenital contact in the preceding six months; and the relative frequency of condom use in casual contacts (on a 5-point ordinal scale from 5 = “never”, 4 = “rarely”, 3 = “often/half the time”, 2 = “almost always” to 1 = “always”), where a “casual contact” was defined as a partner with whom on a maximum of two occasions sexual contact had occurred in the preceding three months. As the CT study recorded country of birth, a more precise distinction could be made between different ethnic groups: visitors born in Surinam or in The Netherlands Antilles were analysed separately; Moroccans and Turks are defined as having Moroccan or Turkish nationality or having been born in one of the respective countries; Dutchmen were defined as having Dutch nationality and having been born in Europe; “others” have a different nationality from the above men-

tioned or have Dutch nationality but were not born in a country mentioned above.

The time frame within which detailed information on sexual behaviour was available was split into three periods. Period I ran from 1 September 1986, the start of the CT study, to April 1987, shortly after the start of the first national AIDS prevention campaign. Period II ran from 1 May 1987 till the end of 1987 and period III covered the whole of 1988. While comparing period II with I is mainly a comparison between periods in which extensive attention was and was not paid to the risk of heterosexual transmission of HIV, comparing periods II with III may give insight into the effectiveness of this attention on a longer term.

Statistical analyses were performed using SPSS/PC+.⁸ Statistical tests used were: Mann-Whitney U test for (skewed) interval and ordinal variables and chi square test for dichotomous variables. Testing was two-tailed.

Results

Male STD clinic attenders

The indexed numbers of different male visitors for both clinics jointly, per year and per subgroup, are shown in fig 1. A marked decrease in the number of homosexual men (all nationalities) is evident, which started in 1984 and which led to a decrease in the number of homosexual visitors in 1988 to only 34% of the number in 1983. In 1989, for the first time since 1983, a slight increase was seen (+4% compared with 1988). The number of bisexual men mirrors the pattern of homosexual men.

In Dutch heterosexuals, a convincing decline in the number of attenders appeared from 1987 only. The total number of attenders in 1989 was 64% of the number in 1986. A conspicuous rise in the number of heterosexual Moroccan visitors was seen till 1987. After this year, however, a decline occurred in the number of attenders of 32% in 1989 compared with 1986, analogous to the

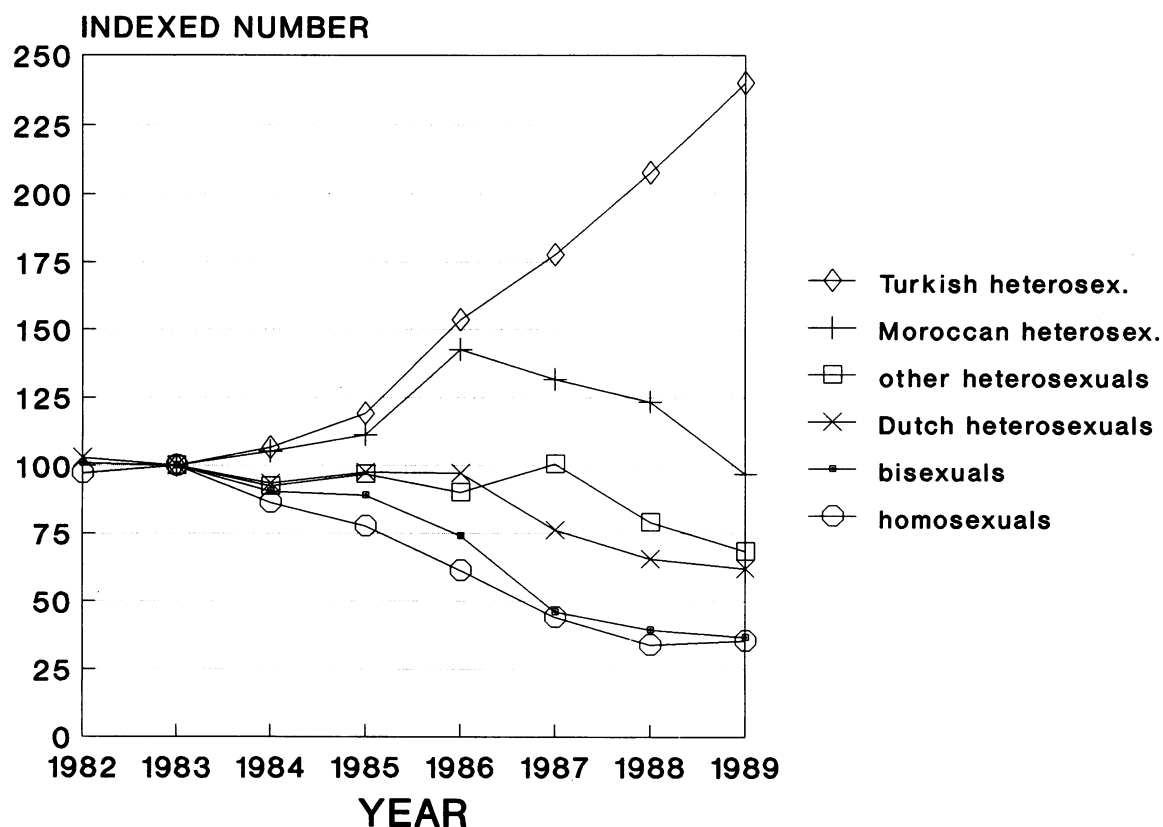


Fig 1 Indexed numbers of male visitors of two STD clinics in Amsterdam per year (1983 = 100), 1982-1989. (Number of male attenders in index year 1983: 3201 homosexuals, 228 bisexuals, 5118 Dutch heterosexuals, 287 Turkish heterosexuals, 249 Moroccan heterosexuals and 1411 heterosexuals of other nationalities. Since separate data for Turkish, Moroccan and "other" heterosexuals were not available for 1982, they are not displayed here).

decline in Dutch heterosexuals. In contrast, among Turkish heterosexual men a very different pattern was found: a continuous rise occurred in the number of visitors; in 1989 it had more than doubled (+140%), compared with 1983. The increase from 1986 till 1989 was 56%. The mean number of new consultations per year per person decreased in homosexuals from 1.51 in 1984 to 1.33 in 1987 ($p < 10^{-6}$), and has remained stable since (1.31 in 1989). During the period of declining numbers of attenders, no significant changes in the mean number of consultations appeared in the heterosexual groups (1986–1989) or in the bisexual group (1.34 in 1984; 1.32 in 1989).

The likelihood that at least one STD diagnosis was made at an attender's first visit in a calendar year, fluctuated in homosexuals around 50% (46–52%) in the period 1983–1988, in bisexuals around 55% (47%–59%) and in Dutch heterosexuals around 66% (63–68%). Among the groups of

foreign nationalities the likelihood was around 70% (64–75%). In 1989, a notably higher likelihood of a diagnosis being made was seen in all groups, particularly among homosexuals and bisexuals: in homosexuals 66%, bisexuals 68%, Dutch heterosexual 71%, Moroccan heterosexuals 73%, Turkish heterosexuals 75% and other foreign heterosexuals 78%.

Female STD clinic visitors

After 1986, both in Dutch prostitutes and in Dutch and foreign non-prostituting women, a trend in the number of visitors parallel to the one in Dutch heterosexual men can be seen (fig 2). In 1988 the number of attenders among these three female groups was 63%, 71% and 82% respectively of the number in 1986. However, in 1989 in both Dutch female groups an increase was observed. In Dutch prostitutes this increase was as high as 12%, compared with the previous year.

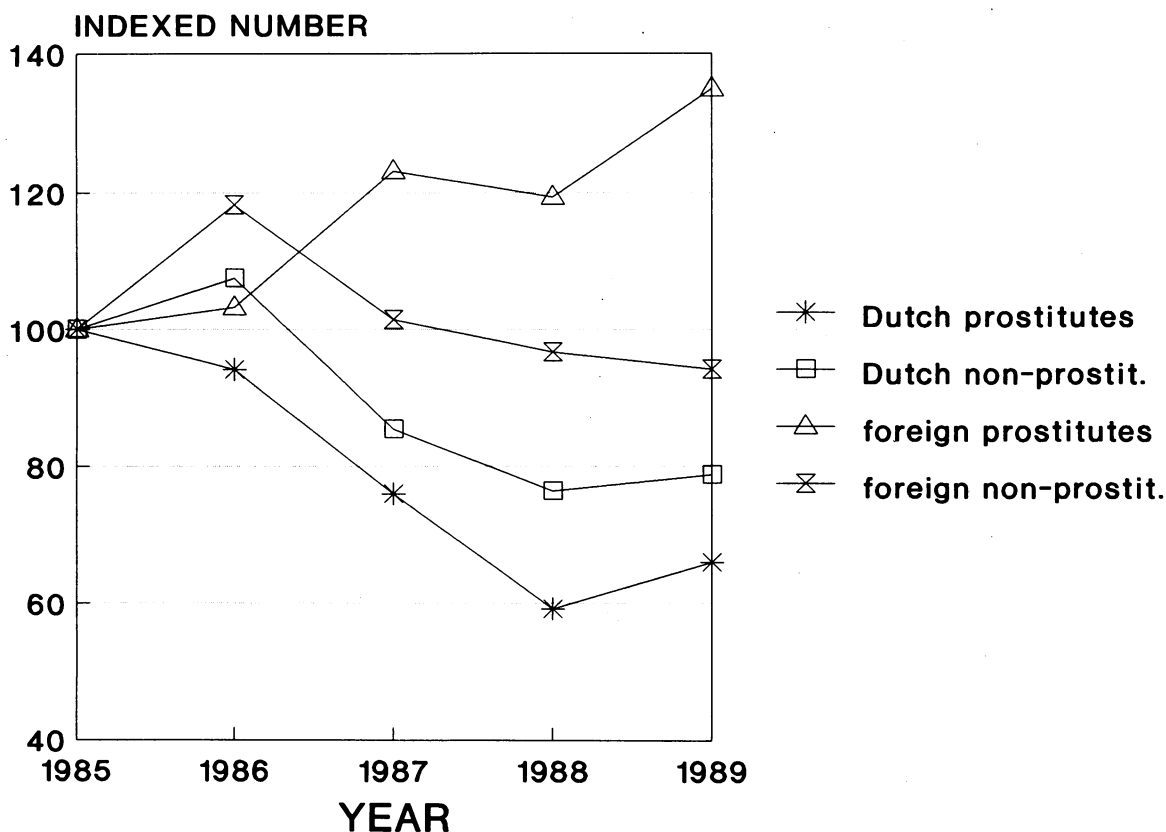


Fig 2 Indexed numbers of female visitors of two STD clinics in Amsterdam per year (1985 = 100), 1985–1989. (Number of female attenders in index year 1985: 558 Dutch prostitutes, 186 foreign prostitutes, 3223 non-prostituting Dutch women and 484 non-prostituting foreigners).

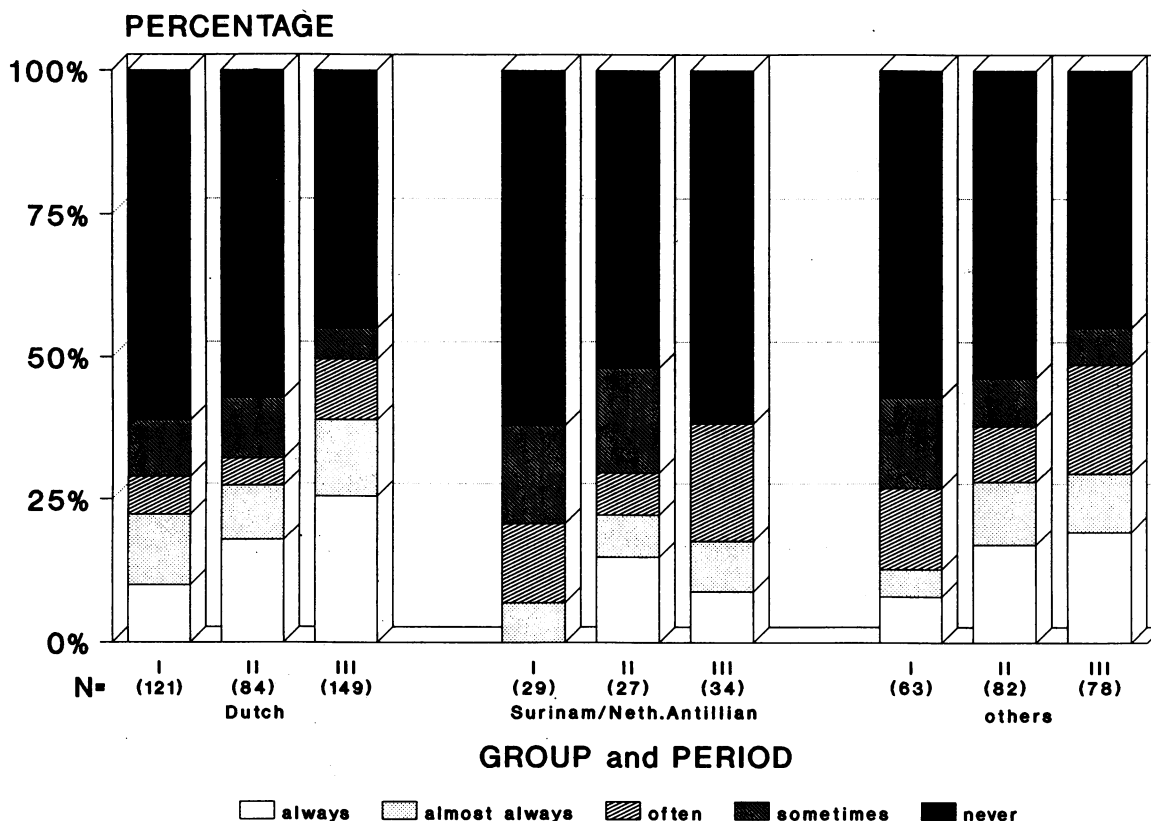


Fig 3 Condom use by 667 heterosexual men with casual contacts in a sample of attenders at an STD clinic, September 1986–December 1988. (Group: Dutch = born in Europe with Dutch nationality; Surinam/Antillean = born in Surinam or in The Netherlands Antilles; others = all that do not fall into one of the above categories).

In contrast, the number of prostitutes of foreign nationality that visited the clinics has risen considerably since 1986 (+31% in 1989).

The mean number of annual visits (new consultations) of prostitutes decreased between 1986 and 1989, though not significantly: from 2.91 to 2.27 for Dutch prostitutes ($p = 0.23$) and from 2.37 to 1.90 for foreign prostitutes ($p = 0.14$). In non-prostituting women, the mean number of consultations remained close to 1.3 per year.

The probability of at least one STD diagnosis being made for a person at the first visit of the year, decreased in all groups from 1986 to 1989. This was most obvious in the cases of Dutch prostitutes (58% in 1986, 51% in 1989; $p = 0.02$) and foreign non-prostitutes (67% in 1986, 59% in 1989; $p = 0.006$), while in Dutch non-prostitutes (62% in 1986, 61% in 1989; $p = 0.26$) and foreign prostitutes (67% in 1986, 63% in 1989; $p = 0.39$) the differences were smaller.

Sexual behaviour in the sample

Heterosexual men ($N = 947$). The total group was of 526 Dutchmen, 137 from Surinam/Netherlands Antilles, 44 Moroccans, 49 Turks and 191 others. In none of the subgroups was a significant change seen in the course of the study period (1 September 1986–31 December 1988) in the number of sexual partners in the preceding month, or in the preceding six months, or in the proportion of persons having casual contacts in the preceding six months. Condom use in casual sexual contacts (fig 3) shows an increase among Dutchmen from 22% always/almost always using condoms in period I, to 39% in period III ($p = 0.0009$). Among men from Surinam/The Netherlands Antilles condom use did not rise significantly ($p = 0.51$), being 7% always/almost always in period I and rising to 18% in period III. Among the group of other attenders (because of small numbers Moroccans and Turks were included here) condom use rose

Table 1 Sexual behaviour of 539 non-prostituting women in a sample of attenders at an STD clinic, September 1986–December 1988

	Period*			<i>p</i> value (I vs III)
	I (N = 157)†	II (N = 154)	III (N = 228)	
> 1 partner in past month	20.5	16.2	18.4	0.53
> 1 partner in past 6 months	56.8	48.7	53.1	0.40
Passive anogenital contact in past 6 months:	10.3	11.1	17.3	0.06
Casual contacts in past 6 months	55.8	45.8	46.3	0.07
Condom use with casual contacts: (almost) always	6.9	30.0	31.4	0.00002

* Period I, September 1986–April 1987; period II, May 1987–December 1987; period III, January 1988–December 1988.

† Because of missing values some of the presented percentages are not based on the total number of non-prostituting women.

from 13% always/almost always in period I to 29% in period III ($p = 0.03$). Viewed over the complete sampling period, Dutch visitors have a tendency towards using condoms more often with casual partners than persons from Surinam/Netherlands Antilles ($p = 0.08$).

Heterosexual, non-prostituting women (N = 539). Because of small differences between the groups, the results of the 485 Dutch and the 54 foreign attenders are jointly displayed in table 1. The proportion of women with more than one sexual partner in the preceding month remains almost constant over the three periods, like that of the proportion of women with more than one partner in the preceding six months. Passive anogenital contact in the preceding six months was reported by 14% of all sampled non-prostituting females. A marginally significant increase in practising this sexual technique was noted, rising from 10% in period I to 17% in period III ($p = 0.06$). A marginally significant decrease was perceived in having casual contacts during the past six months. For those reporting casual partners in the preceding six months, a decrease was seen in having unprotected contact with these partners: condom use increased from period I to period II ($p = 0.0001$), after which a stabilisation occurred.

Female prostitutes (N = 96). Because of the small numbers in the groups, and the generally small

differences between the groups, results for the group of 65 Dutch and 31 foreign prostitutes are shown jointly in table 2. There is a marked decline in the median number of reported partners (mainly customers) in the course of time: decreasing from 35 customers in the preceding month in period I to 15 customers in period III. The number of partners in the preceding six months shows an analogous decrease of 165 in period I to 50 in period III. Among foreign prostitutes a more conspicuous decrease in the number of customers (from 80 to 5 in the last month and from 330 to 24 in the preceding six months) is seen than among Dutch prostitutes (from 26 to 15 in the past month and from 150 to 52 in the preceding six months). Passive anogenital contact is rather uncommon in prostitutes; of the total group only 9% had practised this sexual technique at least once in the preceding six months. There was no indication of a change in the course of the sampling period. Condom use with customers shows a somewhat erratic pattern. In period II a slight, not significant ($p = 0.10$) increase in condom use was noted, in comparison with period I, followed by a slight drop in period III ($p = 0.24$). Comparing the complete sampling period, no difference is seen in condom use in casual contacts between Dutch and foreign prostitutes.

Table 2 Sexual behaviour of 96 prostitutes in a sample of attenders at an STD clinic, September 1986–December 1988

	Period*			<i>p</i> value (I vs III)
	I (N = 32)†	II (N = 27)	III (N = 37)	
Median number partners past month:	35	13	15	0.001
Median number partners past 6 months:	165	130	50	0.005
Passive anogenital contact in past 6 months	6%	11%	11%	0.41
Condom use with customers: (almost) always	59%	78%	68%	0.48

* Period I, September 1986–April 1987; period II, May 1987–December 1987; period III, January 1988–December 1988.

† Because of missing values, some of the presented percentages are not based on the total number of prostitutes.

Discussion

A visit to a sexually transmitted disease clinic is generally a consequence of a sexual contact of which the person involved assumes or suspects that an STD is transmitted. The perceived marked decrease in the number of STD clinic visitors since 1986, which was found in most of the analysed heterosexual subgroups, suggests a decrease in the number of persons with risky sexual contacts in the corresponding Amsterdam subpopulations. Other explanations for this decrease might be a shift in the flow of patients from the STD clinics towards other physicians such as general practitioners and dermatologists, or a decreasing willingness to have themselves examined for STD. The rather constant share of the clinics in the total of notified cases of gonorrhoea in the city of Amsterdam over the past few years (84.7% in 1986 and 86.4% in 1989, data from the Bureau of the Chief Medical Officer of the Ministry of Health) and the remaining constant proportion of visits (at least until 1989) where no diagnosis was made, make these alternative explanations unlikely. Exceptions to the declining trend are Turkish heterosexual men and foreign female prostitutes. It is possible that market-mechanisms—foreign prostitutes who gradually take over the prostitution market, superseding Dutch prostitutes—can explain the increase among foreign prostitutes. The rise in the numbers of male Turkish visitors of 56% since 1986 can only to a certain extent be explained by the 27% increase in the total number of Turkish men within the sexually active age group (18 to 65 years) in Amsterdam in this period,⁹ taking the registered number from the population register as criterion. A sharper increase in the number of unregistered (illegally residing) Turkish men against those who are registered, is also conceivable. Theoretically it is also possible that specifically within this group a shift in the flow of patients towards the STD clinics occurred. Considering the increase of 17% in the number of Moroccan men in Amsterdam in the sexually active age group in the same period, the reduction in the number of visitors in this group measures up to the decrease observed among Dutch heterosexual male attenders, taking into account the fact that the size of this group in Amsterdam increased by a mere 1%. The continuing increase in the number of Turkish male attenders during the past few years, combined with an unchanged low proportion of consultations in which no STD diagnosis was made, indicates that AIDS preventive efforts may not have reached this group or

may have been less effective than in other groups. More research is needed to investigate the mechanisms involved.

STD clinic attenders form a self-selecting group. Findings on sexual behaviour in this group can not simply be generalised towards a larger population. Because "safe lovers" have little reason to (re)visit the clinic, a limitation is set to the behavioral changes that might be observed among attenders. The ascertained increase in condom use with casual contacts therefore may mean that among the heterosexually active population condom use with casual contacts has increased at least as markedly. An indication that safer sexual contact in the general population also expresses itself by a reduction in the number of different sexual partners per unit of time, can be found in the strong decline in the numbers of customers per prostitute. In other groups of heterosexual attenders no significant decrease in the number of sexual partners was found, but this may be because of a "bottom-effect"; since the mean number of partners is already rather low, there is not much room for a decrease.

It is hard to discover a general trend in the sexual behaviour parameters over the three periods. Where changes do occur, the emphasis is sometimes in the transition from period I to period II, and in other instances in the transition from period II to period III. An effect occurring diffusely in time is more apparent then, than an effect concentrated in time.

There are strong indications that since 1989 an increase in risky sexual behaviour is occurring among homosexuals.¹⁰ Although detailed information on sexual behaviour of heterosexuals after 1988 is lacking, there are several indications that suggest that a break in the trend towards fewer risky sexual contacts has also occurred in this group in 1989: increasing numbers of female attenders (with the exception of the very heterogeneous group of non-prostituting foreigners) and the markedly higher probability of having an STD at a new consultation in men. Further evidence for a relapse effect among women is found in data from 30 sentinel practices of general practitioners in Amsterdam.¹¹ After a declining incidence of pelvic inflammatory disease (based on a clinical definition that has not been changed through the years)—51.2 cases per 10,000 women in 1986, 34.8 in 1987, 25.5 in 1988—an increase was noted in 1989 to a level of 32.5 per 10,000 women. These data are also in line with the trends in STD clinic visiting rates observed among female heterosexuals.

As yet, HIV prevalence among promiscuous heterosexuals in Amsterdam is low: Van der Linden *et al*¹² found a prevalence of 0.6% among a selected group of STD clinic attenders. Because of a much higher HIV prevalence in homosexuals (31% in 1984¹³) than in heterosexuals (excluding the known risk groups like intravenous drug users and haemophiliacs) and because of the far greater efficiency with which the virus is transmitted through anogenital contact than through vaginal contact, the probability of becoming infected with HIV during a single "unsafe" sexual contact will be much larger for homosexuals than for heterosexuals. If homosexuals are inclined to relapse into unsafe sexual behaviour, our expectations for heterosexuals cannot be more optimistic.

Resuming our findings we conclude that there are strong indications that heterosexuals in Amsterdam have turned to safer sexual practices as a result of publicity on the dangers of "heterosexual AIDS". Notable exceptions are Turkish men and foreign prostitutes. These groups may need specially tailored prevention efforts to achieve comparable changes of behaviour. Relapse towards unsafe sexual practices appears to be occurring from 1989. More detailed research is needed to investigate the underlying processes that generate the observed behavioral trends.

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